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Title. Fragmentation, circulation, and regime complexes : the network of experts and organizations at the interface between climate and biodiversity

Introduction

This paper aims to identify the interactions between the elements of regime complexes beginning with an analysis of the interactions between two large regime complexes: climate and biodiversity. In the realm of global governance, fragmentation is a recognized and recurrent feature (Frank Biermann, Pattberg, van Asselt, & Zelli, 2009), and the multiple causalities underlying global governance issues along with their often cross-sectoral and cross-scale dynamics constitute major driving forces for fragmented governance. This fragmentation involves interactions between various networks, institutions, values and norms, but the concept of a regime complex (R. O. Keohane & D. G. Victor, 2010) allows us to look beyond this apparent fragmentation and take into account the influence of these networks of norms and actors that intervene within formal intergovernmental processes. Orsini, Morin, & Young defined a regime complex "as a network of three or more international regimes that relate to a common subject matter; exhibit overlapping membership; and generate substantive, normative, or operative interactions recognized as potentially problematic whether or not they are managed effectively" (Orsini, Morin, & Young, 2013). Moreover, the concepts of a regime complex and of the architecture of global environmental governance (Franck Biermann, Pattberg, van Hasselt, & Zelli, 2009) assume the hierarchies, the forms of dependence, and the influence between regimes or accords. The question that arises from this interaction is to know if the climate regime complex, with its anteriority and strong recognition by the IPCC (Intergovernmental Panel on Climate Change), plays a particular role in the formation of a biodiversity regime complex along the lines of the diverse modalities. The hypothesis we propose is that certain organizations and certain individuals play a prominent role in conveying the ideas and models of the climate regime complex to the biodiversity regime complex. After a more precise analysis of the concept of the regime complex and its relevance to the understanding of global environmental governance, we will examine the emergence and installation of these two regime complexes, climate and biodiversity. And finally, we end with a discussion on the interaction modalities between regime complexes, and the role played by certain actors and organizations.

Part 1 : Global environmental governance and the concept of a regime complex.

For more than a century, the environmental field with its inherent diversity has been a source for the creation and development of numerous institutions and international

agreements. During this extended period, studies show the specific character of a policy arena where the work of international institutions is first seen in the agreements involving nongovernmental organizations and then agreements among states, and after the 1970s a progression to intergovernmental organizations (Meyer, Frank, Hironaka, Schofer, & Nancy Brandon, 1997). The idea of an international regime, defined in broad terms as "norms, rules, and procedures agreed to in order to regulate an issue-area" (E. B. Haas, 1980), has led to numerous studies on international governance with respect to three general questions: the emergence of regimes, their effectiveness, and the transformation of their forms of governance (Hasenclever, Mayer, & Rittberger, 1997).

The question of interdependence between agreements and institutions has occupied studies from early on: E. Hass points out that "Nowadays, governments recognize complex cause-and-effect linkages between issues they once considered as distinct" and reignites the idea of "complex interdependence" to highlight the complex and tangled mass of questions that States and international organizations seek to manage at the international level (E. B. Haas, 1980).

A large body of literature takes on the task of analyzing the emergence and functionality of international environmental regimes through multiple case studies on international institutions constructed around an *issue area* at the center of a field[1]. The work of Breitmeier, Young and Zürn seeks to go further than these case studies by concentrating on the construction of a data base of 23 international environmental regimes composed of 172 "regime elements" (Breitmeier, Young, & Zürn, 2006). These studies consider a regime to be composed of several relatively independent subsets, grouped around a particular agreement during a given period of time, and presenting a path for the exploration of the complexity at the interior of the regime.

Indeed, following the paths through the multiplication of agreements, regimes, and institutions as well as the interventions of an increasing number of different actors (state and non-state actors, transnational actors, . . .) lead certain studies to a more comprehensive understanding of the complicated dynamics of interdependence. At this point, fragmentation is fully recognized as a recurrent feature of global environmental governance (Frank Biermann et al., 2009). The multiple causalities underlying global governance issues, often cross-sectoral and cross-scales in nature are major factors behind the forces driving this fragmentation of governance involving the interactions between various networks, institutions, values, and norms. Bierman and his colleagues set out to differentiate three types of fragmentation: synergic, cooperative, and conflictive. For them, analyzing the fragmentation is a way to develop a research agenda on global governance architectures rooted in the earlier works on interlocking

[1] Like (Franck Biermann et al., 2009), "We understand the term "issue area" in a narrow sense compared to the more generic term "policy domain." Environment and trade constitute two different policy domains, whereas, for instance, climate change and biological diversity are two issue areas, both pertaining to the domain of environment"

institutions, and more recent works on the interplay or overlap between international institutions or regimes (Franck Biermann et al., 2009).

Following this trend in research on complexity and fragmentation, the concept of a regime complex was developed to characterize the situations where questions at the international level brought into play several "regime elements". Raustiala and Victor describe a regime complex: "Rather than a single, discrete regime governing Plant Genetic Resources (PGR), the relevant rules are found in at least five clusters of international legal agreements – what we call elemental regimes – as well as in national rules within key states, especially the United States and the European Union (EU). These elemental regimes overlap in scope, subject, and time; events in one affect those in others. We term the collective of these elements a regime complex: an array of partially overlapping and nonhierarchical institutions governing a particular issue-area" (Kal Raustiala & David G. Victor, 2004). Kehoane and Victor fine-tune this idea of a regime complex: "At one extreme are fully integrated institutions that impose regulation through comprehensive, hierarchical rules. At the other extreme are highly fragmented collections of institutions with no identifiable core and weak or nonexistent linkages between regime elements. In between is a wide range that includes nested (semi-hierarchical) regimes with identifiable cores and non-hierarchical but loosely coupled systems of institutions. What we are calling "regime complexes" are arrangement of the loosely coupled variety located somewhere in the middle of this continuum: there are connections between the specific and relatively narrow regimes, but no overall architecture that structures the whole set" (R. O. Keohane & David G. Victor, 2010) (p 3-4).

The authors believe that "often several narrow regimes coexist in the same issue-area without clear hierarchy. Under these conditions, which favor, conflicts between individual regulatory elements may be especially likely to arise." In this last context, they point to the strategy of forum-shifting where the States sometimes seek to displace the regulatory agenda from one organization to another, either abandoning the first or sharing the agenda among several organizations. "To solve problems in each forum, governments try to link issues in the forum to other issues in ways that will help them achieve their objectives. Yet institutional design may favor continued fragmentation, such as when it is administratively difficult to create extensive links between distinct regulatory elements. The result can be a regime complex." By examining the forces of fragmentation and integration in the climate regime complex, the authors suggest "to think about international regimes and regime complexes in ways that could facilitate effective action on the pressing contemporary set of problems surrounding climate change." More recently, Orsini, Morin and Young debate the definition of Raustiala and Victor and suggest the following definition: "*Regime complex* as a network of three or more international regimes that relate to a common subject matter; exhibit overlapping membership; and generate substantive, normative, or operative interactions recognized as potentially problematic whether or not they are managed effectively" (Orsini et al., 2013).

The question that arises from this discussion is to know if the climate regime complex, by virtue of its anteriority and the strong influence of the IPCC, plays a particular role to

inspire, among the diverse modalities, the biodiversity regime complex. Our hypothesis is that certain organizations and certain individuals play a prominent role in the transfer of ideas and models of the climate regime complex to the biodiversity regime complex.

The concept of a regime complex, and that of an architecture of global environmental governance (Franck Biermann et al., 2009) assume hierarchies and forms of dependency or influence between regimes and agreements. The concept of a regime complex has above all been created to explore the internal complexity of a given regime.

Part 2: Emergence and installation of the climate and biodiversity regime complexes.

2.1 The climate regime complex: a unified complex

It has become trite to point out that global warming or climate change is a world-wide problem, and the climate regime complex is fairly unified as compared to the more recent regimes of biodiversity. The governance of climate change follows a course of action designed to set up decision making mechanisms that guarantee the quality of knowledge. According to Young (Young, 1998) p2, we can identify three stages of regime development: agenda formation, negotiation and operationalization.

Andresen and Agrawala (Andresen & Agrawala, 2002), contend that the agenda formation period of the climate regime extends from the late 1950s to the start of intergovernmental negotiations in early 1991. This stage can be further sub-divided into two phases. The first continues until the Toronto Conference of 1988 which saw the first international success of the idea of cutting emissions. This is a period completely dominated by non-state actors. The first worldwide conference on the climate takes place in 1979 under the aegis of the World Meteorological Organization (WMO). The WMO initiates a research program (World Climate Program) and lays the foundation for three meetings held in 1980, 1983, and 1985 at Villach in Austria. The idea of an intergovernmental forum of expertise on the subject of climate change first emerges at those meetings in Austria, and the first recommendations for the reduction of carbon dioxide emissions were formulated during two subsequent meetings in 1987. The following year, 1988, corresponds to the creation of the IPCC and opens the second phase of "formation". The United States plays a decisive role in the creation of an intergovernmental mechanism. The IPCC mission does not include undertaking actual scientific research, but focuses on evaluating studies already achieved and proposing a synthesis of the work. Nevertheless, the IPCC amasses a store of knowledge, highly regarded and anticipated, on the state of greenhouse gas (GHG) emissions. Since 1990,

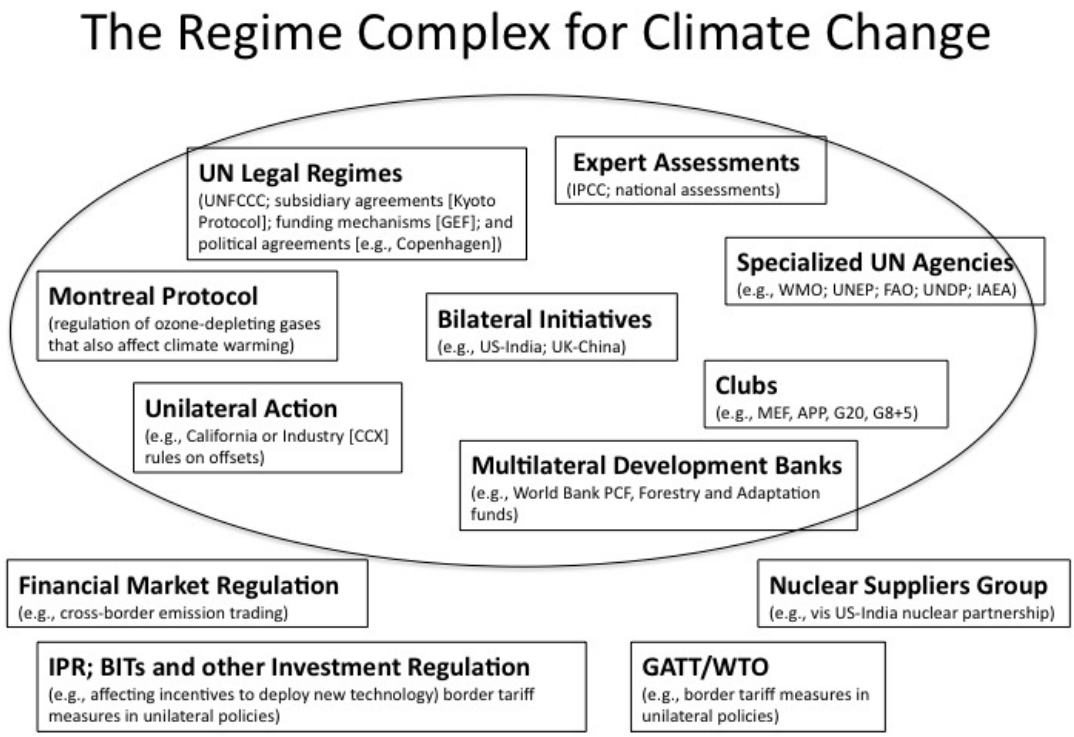
the IPCC has produced general and special reports on global warming and it makes up one of the three essential elements of the climate regime complex (Dahan Damedico & Guillemot, 2006; Encinas de Munagorri, 2009; Paterson, 1993). The latter phase of the first stage of formation also witnesses the gradual ascendance of State actors and early informal negotiations from 1988 to 1991.

The second, or "negotiation stage" begins in 1991 with the adoption of the Climate Convention and continues until the adoption of the Kyoto Protocol in December 1997. In 1985, inspired by the success of the negotiations on the ozone and the signing of the Montreal Protocol, Mustapha Tolba, director of the United Nations Environmental Program (UNEP), forcefully expresses the hope of achieving an international convention on climate, at the Villach conferences. But it wasn't until 1992 that the United Nations Framework Convention on Climate Change (UNFCCC) was signed at the Rio Conference. The UNFCCC along with the subsequent Conferences of the Parties (COP) constitute the base of world governance for the climate. In the convention framework adopted in 1992, the goal of a reduction of greenhouse gases is established and will lead to commitments to actual numbers.

The third stage of "operationalization" is achieved beginning in 1997 with the adoption of the Kyoto Protocol. The protocol attempts to secure the commitments made in the UNFCCC by putting in place the mechanisms known as Flexibility Mechanisms[2](Goers, Wagner, & Wegmayr, 2010; Schneider, 1998; Tietenberg, 2003). The Kyoto Protocol is in some ways the implementation instrument for the decisions of the COP. After Kyoto, and following the failure of the conference in Copenhagen that was meant to reorganize terms for a second agreement, it is decided at the Doha Conference in 2012 to extend the Kyoto Protocol up to 2020. The Doha agreement reaffirms the goal to adopt "a protocol, another legal instrument, or some form of legally binding agreement" at the United Nations (UN) conference scheduled for 2015 that would go into effect in 2020, and reflect the goal of limiting the global elevation of temperature to +2°C. Rather than being limited to the industrialized nations as in the Kyoto Protocol, this agreement includes all countries, including the large emerging countries and the United States.

[2] Rather than set up a system of taxes, the Kyoto Protocol put in place economic incentives in the form of two types of mechanisms which are different but unified by the creation of a carbon unit as the means of exchange: carbon emissions trading by the States, and two project-based mechanisms, the clean development mechanism (CDM), and Joint Implementation (JI). Supported by the US, this scheme was first considered with extreme prudence by the Europeans before becoming its principal defenders after the turn of the century. In the end, the United States did not ratify the Kyoto Protocol when the Senate legislature determined that it hurt US competitiveness against emerging countries that would not have the constraint of limiting their emissions under the Kyoto framework.

This historic approach of the climate regime complex shows that the questions surrounding global warming were examined at the heart of a single convention, the UNFCCC, with which the IPCC and the Kyoto Protocol are closely associated. Many participants revolve around these three elements. Keohane and Victor more precisely identify the elements that compose a regime complex: the institutions or clusters of institutions (R. O. Keohane & David G. Victor, 2010; Keohane & Victor, 2011), and notably the international organizations (e.g. UN agencies, Multilateral Development Banks,...), the inter-State regulation framework (UN Legal Regime), the country clubs (G20,...), the scientific evaluation authorities (IPCC,...). the initiatives (unilateral, bilateral), and the specific agreements (Montreal Protocol).



Michonski and Levi propose a more detailed description of the composition of the climate change regime complex (Michonski & Levi, 2010) identifying 7 large categories : environmental institutions, informal leader forums, sector-based institutions, energy institutions, development institutions (non-banking), multilateral development banks, and other institutions such as the World Trade Organization (WTO). Yamin and Depledge also identify 4 large categories of participants in the regime complex (Yamin & Depledge, 2004) and go even further by showing that the climate regime interacts with other multilateral environmental regimes. In addition the international commerce regime (WTO) and the human rights regime by virtue of the question of climate refugees are implicated in the mix. And it should be noted that the complex climate regime also integrates the negotiations related to the questions of biodiversity and to global warming through the Reduced Emissions from Deforestation and Forest Degradation (REDD) type mechanisms. Launched in 2008, the United Nations REDD program or UN-REDD is a

mechanism established under the UNFCCC that was created to help developing countries carry out REDD+ strategies.

Although the climate regime complex may interact with other regime complexes (commerce, biodiversity), it remains nevertheless a regime complex that is unified around a single convention, and is by consequence, less fragmented than the biodiversity regime complex.

2.2 The fragmentation of the biodiversity regime complex.

Few works attempt to understand the biodiversity regime complex as a whole since the complex is scattered among several sub-groups, all of which address specific dimensions of biodiversity while still being conducted to deal with the same themes. (Le Prestre, 2004). In addition, the creation of the biodiversity regime complex has not followed a linear evolution, leaving little relevance to Young's theory on the construction of regimes. Above all, the regime complex is characterized by its fragmentation and more recently by several initiatives intending to advance the global understanding of biodiversity questions and thereby improve the unity of the regime.

Historically, well known scientists begin to draw attention in the late 1970s to a mounting concern over the extinction of species. But it is the middle of the 1980s before the "biodiversity crisis" (Takacs, 1996) becomes a focus for the media, leaders, and the general public through the emergence and diffusion of the neologism, "biodiversity" (as a contraction of biology and diversity). During the same period, in 1980, the International Union for Conservation of Nature (IUCN), supported by the Food and Agriculture Organization (FAO), the United Nations Educational, Scientific, and Cultural Organization (UNESCO), and the World Wildlife Fund (WWF) presents a strategy for global conservation of biodiversity that aims to reconcile the objectives of conservation and development, which had been traditionally judged incompatible.

The plan from the IUCN is an early landmark in favor of a multilateral regime for biological diversity, and serves as a base for the preliminary texts that occupied the negotiations of 1990. Little by little, the questions of biodiversity begin to insert themselves at the international level, and reach another milestone as they appear firmly in the framework of the Rio Summit (1992) and the Convention of Biological Diversity (CBD) of the same year. However, where the question of climate change is managed at the international level through the single structure of the UNFCCC, the questions related to biodiversity are treated in an ensemble of conventions and international agreements, each with their own dynamic and modes of function. In fact, several international conventions treat biodiversity in a sectoral fashion such as the conservation of wet lands in the Ramsar Convention (1971), the Convention on International Trade in Endangered Species (CITES)(1973), the Convention on Migratory Species (CMS) adopted in 1979 and in place since 1983, and the International Convention for the Protection of New Varieties of Plants (UPOV) first established in 1961 and then amended in 1978 and 1991. These conventions can also be uniquely regional constructs, such as the Bern Convention on the conservation of nature in Europe.

Surrounding the complex of conventions are numerous actors who may concentrate on one convention or several at the same time. Even at the center of the biodiversity regime complex, we can identify sub-groups of specific actors and even specific protocols, all structured around a single convention. For example, the regime of plant genetic resources (PGR) is analyzed by Raustaiala and Victor (K Raustiala & D. G. Victor, 2004)

who suggest that the regime complex consists of 5 clusters of international accords that they call the *elementary regimes*: the UPOV, the International Undertaking on Plant Genetic Resources (IUPGR) of 1983 and the 2002 international Treaty on Plant Genetic Resources (TPGR) negotiated under the auspices of the UN and the FAO, the Consultative Group on International Agriculture Research (CGIAR), the WTO's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), and the CBD.

Although the CBD could be considered as offering an encompassing framework for biodiversity questions, it is primarily concerned with regulatory questions of access to genetic resources, especially through the 2000 complementary agreement on biosecurity (the Carthage Protocol, and later the Nagoya Protocol of 2010). Thus the questions of genetic resource management take precedence over the questions of natural habitat and species conservation (Boisvert & Vivien, 2010). The IPCC inspired the idea of an international evaluation on biodiversity, and in this context, the Millennium Ecosystem Assessment (MA) emerged. The MA introduces and popularizes the concept of ecosystem service and thus permits, in a larger sense, the proposal of a more global approach to biodiversity (Pesche, Méral, Hrabanski, & Bonnin, 2013). The MA is an important step in the process of the unification of multilateral agreements dealing with biodiversity that finally succeeds in 2010 with the creation of the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). However, the biodiversity regime complex rests fragmented between numerous sub-groups (endangered species, genetic resources…) and interactions with other complexes such as commerce, climate, and human rights. Furthermore, as previously noted, the broad field of forest conservation spans both the climate regime complex and the biodiversity complex, and it does so to the extent that certain authors talk about a *non-regime* to qualify the multiplicity of efforts at forestry regulation and management (Dimitrov, Sprinz, DiGiusto, & Kelle, 2007).

Partial Conclusion

It is clear that the climate regime complex precedes the biodiversity regime complex. The IPCC is established in 1988 and will inspire subsequent creations and eventually the MA between 2001 and 2005. But it isn't until the IPBES arrives in 2010 that we see the creation of a permanent intergovernmental expertise based on the model of the IPCC. Similarly, even though the UNFCCC and the CBD are both signed in 1997, the regime complex simply acquires an implementation instrument from the decisions of the COP of the UNFCCC. In the biodiversity regime complex, two protocols come later with the signature in 2000 of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, then the 2010 Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity, but these protocols only covered a specific dimension of biodiversity questions.

The climate regime complex is also more unified than the biodiversity regime complex. Although the climate regime complex interacts with several other regime complexes, it is nevertheless structured around a single convention that combines multiple actors. Some

of these actors are also active in the biodiversity regime complex and in the numerous sub-groups that it encompasses.

2.3 Regime Comlexes, interfaces and circulation

The theories on international regimes have generally granted a prominent place to State and intergovernmental actors, while at the same time recognizing the growing role of non-State actors in global environmental governance (Bernstein & Cashore, 2007; Betsill & Corell, 2001; Boström & Hallström, 2010; Conca, 1995). The increasing diversity of institutions is recognized as one of the reasons behind the growing complexity of regimes and one of the primary challenges in the efforts to construct stable and effective international agreements. According to Alter and Meunier, the complexity of international environmental regimes is affecting the decisions and the behavior of actors : the experts (NGOs, legal experts…) play a growing role in accompanying the States in navigating this confusing institutional scene (Alter & Meunier, 2009).

Institutional complexity has recently been the subject of research seeking to better understand the mechanisms of actor influence in the multiple forums and environmental regimes. The practice of forum shopping, shifting, or linking enables the analysis of the work of State and non-State actors in a way that isolates part of the institutional fragmentation: with their ability to participate in several forums in parallel, these actors who are already influential in general, acquire added practical experience, access strategic information, and can often reinforce their position (Alter & Meunier, 2009; Orsini, 2013).

In general, the actors studied in the analyses are collective actors (Etats, international organizations, companies, NGOs,…) but several studies also underling the potential importance played by interconnected individuals. The concept of a transnational epistemic community evokes an image of a network of individuals across institutions that play an important role in bringing together ideas in the function of international regimes : "members of transnational epistemic communities can influence state interests either by directly identifying them for decision makers or by illuminating the salient dimensions of an issue from which the decision makers may then deduce their interests. The decision makers in one state may, in turn, influence the interests and behavior of other states, thereby increasing the likelihood of convergent state behavior and international policy coordination, informed by the causal beliefs and policy preferences of the epistemic community. Similarly, epistemic communities may contribute to the creation and maintenance of social institutions that guide international behavior" (P. M. Haas, 1992)"

In their work on the construction of a database covering international environmental regimes, Breitmeier, Young and Zürn, include not only the States, and certain NGOs and companies, but also individuals that play a notable role in the emergence of a regime. As the authors state, several individuals play, alone, a specific role in more than one regime (Breitmeier et al., 2006). The research of Moravcsik explores the roles played by "supranational policy entrepreneurs" in the construction of international accords As Moravcsik points out, "supranational actors wield influence due to a superior ability to overcome domestic and transnational coordination problems, which reflects greater administrative coherence, insulation from social interests and centrality in transnational

networks." These transnational entrepreneurs play the role of advocate, to persuade or influence States in the form of three principal functions: "The first function is policy initiation, sometimes termed "in-formal agenda-setting", in which the entrepreneur launches a discussion by highlighting problems, advancing workable proposals, underscoring potential material benefits, or linking the outcome to symbolic values. The second function is mediation, in which the entrepreneur intervenes in ongoing interstate negotiations to propose new options or compromises. The third function is mobilization of domestic social support for an agreement" (Moravcsik, 1999). These analyses agree with research conducted on the study of domestic public policy that grants an important role to the ideas in policy change and considers the face of the "broker" as an important explanatory element of policy change. (Kingdon, 1995; Sabatier, 2007).

In the list of authors cited below, we give particular importance to the individual actors strongly involved in the emergence and function of the regime complexes as a means of identifying those who play a role of "broker" or conduit at the interface between complexes.

Part 3 Connected regime complexes : micro and macro analyses of the interaction modalities between climate and biodiversity regime complexes.

3.1 Organizations implicated in the 2 regimes

Several institutions with central roles in global governance (UNEP, United Nations Development Program (UNDP), FAO, World Bank) clearly contribute to the substance and structure of forums, accords and regimes. Certain non-State actors (NGO, think tank, business associations, research centers) are also found in multiple forums and contribute to the circulation of ideas and models between regime complexes.

Michonski and Levi show that it is possible to identify 7 large categories of entities that are mobilized in the climate regime complex: 1. institutions focused on the environment such as the UNEP, 2. informal leader forums, 3. sectoral institutions, 4. institutions focused on energy, 5. (non-banking) development institutions, 6. multilateral and development banks, 7. other institutions such as the WTO.

Taking inspiration from this classification, we were able to identify the types of entities that are present in both biodiversity and climate regime complexes. In both regimes, we were able to actually identify environmental institutions, such as the UNEP, development institutions, multilateral development banks, and institutions like the WTO. However the two complexes do not harbor the same informal leader forums, or sectoral institutions, nor do we find the same energy institutions. There are however other actors and organizations participating in both complexes. The work of Yamin and Pledge also identifies countries or groups of countries, and NGOs (noting the large families: environmental NGOs, business and industry associations, local authorities, indigenous associations, NGOs tied to research).

Combining this work produces a typology of the organizations present in both the climate regime complex and the biodiversity complex based on the following categories:

1. Institutions specialized on the environment such as the UNEP
2. Non-banking development institutions (FAO, WFP)
3. Multilateral development banks
4. Other institutions such as the WTO
5. Countries and groups of countries
6. NGOs (environmental NGOs, NGOs tied to research, business NGOs, indigenous associations, and NGOs tied to local authorities
7. Research organisms (universities, research centers)

Found at the interface between the two regimes, these 7 types of organizations participate in the circulation of the norms and public policy models between regimes. In order to clarify the analysis on the circulation modalities, we chose to develop a more micro sociological analysis. Even if these organizations can be found in several regime complexes, the same department or service is not always implicated in one or the other of the regimes. The link is more often found in individuals situated in key posts in certain institutions who have professional paths which cross or hinge between several political or scientific processes.

In order to test the relevance of a more micro sociological analysis, we examined a key event in the process of the consolidation of the biodiversity regime complex, the Millennium Ecosystem Assessment (2001-2005). This exercise will first allow us to analyze to what degree the IPCC influence the MA in terms of an organizational model. Following, we will analyze the participation of the experts implicated in the MA and in the climate complex in order to identify the instances where there is an interface of exchange and to better understand the modalities of interaction between the to complexes.

3.2. The conditions of a global evaluation of ecosystems: the model of the IPCC?

The Group of Intergovernmental Experts on Climate evolution (GIEC/IPCC) has witnessed complex and ambivalent relations between science and policy decisions. Even if they raise controversy between Northern-Southern relations, the first reports (1990 and 1995) appear to many as models of scientific evaluation intended to educate policy decision makers.

A short time after the creation of the CBD (1992-1994) a global evaluation of the state of the biodiversity is initiated with the support of the UNEP and the Global Environment Facility (GEF)(1993-1995). The Global Biodiversity Assessment (GBA) seekes to create an independent scientific exercise to establish the state of the art on questions tied to the complex subject of biodiversity (Heywood, 1995). The report of the GBA does not make a recommendation to decision makers and carries the principle message that there is still a very limited base of knowledge on the processes related to the questions of biological diversity. As noted by Robert Watson, the GBA exercise was an excellent scientific work, but it had practically no impact on policy formulation because it was conducted like a non-governmental exercise, without approval of the public powers (Frank Biermann, 2001). The report of the GBA does not make a recommendation to decision makers and carries the principle message that there is still a very limited base of knowledge on the

processes related to the questions of biological diversity. As noted by Robert Watson, the GBA exercise was an excellent scientific work, but it had practically no impact on policy formulation because it was conducted like a non-governmental exercise, without approval of government entities (Watson, 2005). In addition, it was partially rejected by the intergovernmental authorities: certain countries, like Brazil, rejected the conclusions, considering that they never asked for that type of evaluation [3].

In the charged context that follows the Rio Summit, with the implementation of several intergovernmental Conventions, some parties feel that the fragmentation of the criticisms and analyses weaken the possibility to carry out significant change in environmental practices. One study organized jointly by the United Nations Environment Program (UNEP), the National Aeronautics and Space Administration (NASA), and the World Bank provides an excellent illustration of this growing awareness: "*The importance of global environmental issues - such as climate change, loss of biological diversity, stratospheric ozone depletion, deforestation, and water degradation - to poverty alleviation and development is now becoming more fully recognized. However, these global environmental issues are, to a large extent, normally thought of as isolated issues by both the scientific and policy communities. As a result, they often fail to adequately recognize that there are strong scientific and policy interlinkages among the global environmental issues, between global environmental issues and local and regional environmental issues, and between environmental issues and basic human needs-adequate food, clean water, energy services, and a healthy environment. If these global environmental issues are to be addressed within a more holistic and synergistic policy framework it is essential to gain an improved understanding of the scientific and policy interlinkages among them and how they influence our ability to meet basic human needs*"[4]. This report constitutes an important milestone in process of setting up the MA [5].

Shortly after, at the beginning of 1998, a small group of associates including Harold A. Mooney of the International Council for Science (ICSU), Walter V. Reid of the World Resources Institute (WRI), and Robert Watson use lessons from the GBA experience to set up a device that starts from the beginning by associating the scientific community and the potential users of a scientific evaluation (governments, private sector, NGO,…). A process completely non-governmental, the idea of the MA develops progressively to three international conventions (CBD, CITES, and CMS) and puts in place a system of revision by associating pairs of experts and government representatives. The general organizational structure of the MA was based in part on that of the IPCC that is often brandished as a model in terms of "independent" scientific evaluation. The work of the MA is often organized in three work groups, "condition and trends", "scenario", and "political responses". The MA added a fourth workgroup on sub-global evaluations. The credibility of the scientific evaluation process is also related to its capacity to identify and qualify the zones of uncertain knowledge often fragmenting for ecosystems. Again taking inspiration directly from the IPCC, this aspect was integrated into the work method of the MA and thus reinforces the credibility of the information and knowledge produced[6]. The

[3] Entretien avec Harold A. Mooney, mars 2011.
[4] (Watson, Dixon, Hamburg, Janetos, & Moss, 1998)
[5] (Meral, 2010), pages 17 et 18.
[6] (Reid et al., 2002)

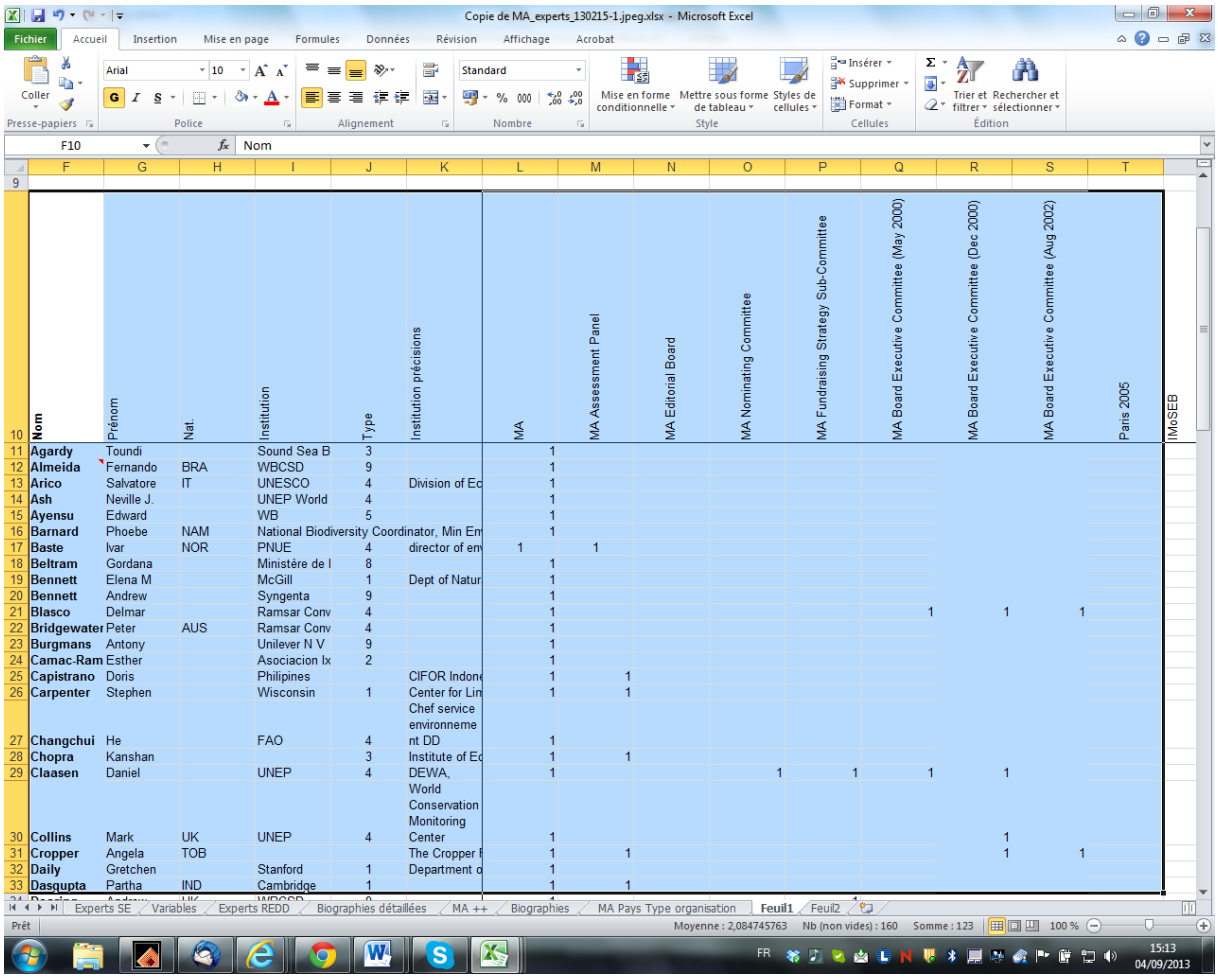
MA adopted a method that incorporates the information pulled directly from the experiences of the IPCC: "The basic methodological approach of the MA is the same as that of the Intergovernmental Panel on Climate Change (IPCC). Like the IPCC, the MA is a critical assessment of the "state of knowledge" pertaining to issues of relevance to the Assessments' audience (…)". This fairly direct transfer of experience is made possible by the fact that the MA animation team is directly influenced by the research conducted during this period at the John F. Kennedy School of Government of Harvard University to pull information and scientific evaluation in various fields but particularly in the field of climate (Cash & Clark, 2001; The Social Learning Group, 2001a, 2001b).

Beyond the direct influence of the IPCC on the MA's organizational model, it appears the experts involved in the MA are largely from the climate regime complex, which again points towards the important contribution of the climate regime complex to the unification of the biodiversity regime complex.

3.3 The climate experts involved in the MA

Experts involved in the most influential organs of the MA

Not all of the 1360 experts assembled in the MA were involved at the same level. In order to analyze their involvement we constructed a database beginning with experts implicated exclusively in the assessment panel (17 individuals), the scientific arm of the MA in the exploratory committee (22 individuals), and the political organ, the Board (33 individuals). Three individuals were in all three groups, so we had a sampling of 80 individuals. With the help of an analysis of the resumes of the experts, several variables were coded : the institutional membership of the experts, their involvement in other global evaluations, their type of involvement in the MA, their educational or training origins, and mentions of other global negotiations.



Nom	Prénom	Nat.	Institution	Type	Institution précisions	MA	MA Assessment Panel	MA Editorial Board	MA Nominating Committee	MA Fundraising Strategy Sub-Committee	MA Board Executive Committee (May 2000)	MA Board Executive Committee (Dec 2000)	MA Board Executive Committee (Aug 2002)	Paris 2005	IMoSEB
Agardy	Toundi		Sound Sea B	3		1									
Almeida	Fernando	BRA	WBCSD	9		1									
Arico	Salvatore	IT	UNESCO	4	Division of Ec	1									
Ash	Neville J.		UNEP World	4		1									
Ayensu	Edward		WB	5		1									
Barnard	Phoebe	NAM	National Biodiversity Coordinator, Min En			1									
Baste	Ivar	NOR	PNUE	4	director of en	1	1								
Beltram	Gordana		Ministère de l	8		1									
Bennett	Elena M		McGill	1	Dept of Natur	1									
Bennett	Andrew		Syngenta	9		1									
Blasco	Delmar		Ramsar Conv	4		1					1	1	1		
Bridgewater	Peter	AUS	Ramsar Conv	4		1									
Burgmans	Antony		Unilever N V	9		1									
Camac-Ram	Esther		Asociacion Ix	2		1									
Capistrano	Doris		Philipines		CIFOR Indone	1	1								
Carpenter	Stephen		Wisconsin	1	Center for Lin	1	1								
					Chef service environneme										
Changchui	He		FAO	4	nt DD	1									
Chopra	Kanshan			3	Institute of Ec	1	1								
Claasen	Daniel		UNEP	4	DEWA, World Conservation Monitoring	1			1	1	1	1			
Collins	Mark	UK	UNEP	4	Center	1						1			
Cropper	Angela	TOB			The Cropper F	1	1					1	1		
Daily	Gretchen		Stanford	1	Department o	1									
Dasgupta	Partha	IND	Cambridge	1		1	1								

The variable that concerns the involvement of the experts in other regime complexes permitted the identification of 12 individuals (out of the 80) that had concurrent responsibilities in the highest scientific authorities, and or in the policies of the MA and also important responsibilities in the climate regime complex and/or the UNFCCC. The number can seem somewhat limited, however their involvement in multiple organisms seems to reinforce the idea that these actors were in an interface position that would permit them to circulate models, norms, and ideas from one complex to the other.

Leemans	Rik	NTH	Environmental system analysis group	IPCC technical paper V climate and biodiversity IPCC working group II climate change 2001 Impacts adaptation and vulnerability	AP[7]
Gitay	Habiba		Australia	IPCC technical paper V climate and biodiversity	ESC
Pasztor	Janos	HUN	UNFCCC	UNFCCC	ESC
Sarukhan	José	MEX	Université autonome du	IPCC working group II climate change 2001 Impacts	AP

[7] AP: Assessment panel; ESC: exploratory scientific committee; B: board

			mexique	adaptation and vulnerability	
Watson	Robert	UK	WB	IPCC co chair	AP, ESC, B
Thorgeirsson	Halldor	ISL	UNFCCC	IPCC technical paper V climate and biodiversity	B
scholes	Robert	SA	Natural Resources and Environment - CSIR	IPCC technical paper V climate and biodiversity	AP
Finlayson	Max	AUS	Ramsar Convention on Wetlands (SG)	IPCC technical paper V climate and biodiversity	B
Dasgupta	Partha	IND	UK Cambridge	WGIII AR5	AP, B
Samper	cristian	US	Smithsonian Museum	UNFCCC http://unfccc.int/resource/docs/cop5/inf03.pdf	APESC
Pingali	Prabhu	IND	CYMMIT	IPCC Expert Meeting on The Science to Address UNFCCC Article 2 including Key Vulnerabilities	AP, ESC
Shidong	Zhao	CHIN	Acedemy of sciences	ICPP AR4 WG II	AP

Among the 12 persons, several occupy positions in at leas two of the central organs to the MA, confirming their central placement in the process. Certain individuals had also held positions in other sections of the MA (synthesis drafting team, nominating committee…).

Notably, Watson, had multiple positions at the MA (on the board, the assessment panel, and the exploratory committee), as well as having been co-chair of the IPCC for several years. More precisely, Robert T. Watson is a British chemist, specialized in the question of the ozone. He is first, a product of the world of climate change (NASA, research program on Earth...). Then beginning in 1991, he presides over the scientific and technical counsel of the Global Environment Facility (GEF), which seems to push him to also commit to the question of biodiversity, notably as president of the Global Biodiversity Assessment (1993-1995). Director of the environmental department of the World Bank from 1996 to 2001, then chief scientist and counselor for sustainable development at the World Bank, he is from 1997 to 2001 concurrently chairman of the IPCC and co-heads 2 workgroups. Under the leadership of Watson, the IPCC technical paper V on climate and biodiversity was produced, and involved several individuals highly placed at the MA in the drafting of the report. At the same time, he joins the board of the MA that he co-chairs from 1998 to 2005. He is also connected to other regime complexes, especially the agriculture regime complex in as much as president of the Board of IAASTD (International Assessment of Agricultural

Knowledge, Science and Technology for Development (IAASTD) from 2005 to 2007. Today Watson is co-chair of the IPBES. This multipositionality places him in a central position where he has precise experience and where he can be a carrier of ideas, norms, models of public policy, and organizational models from one regime to another.

Experts involved in the drafting of a synthesis report

The outputs of the MA included a general overview and five synthesis reports, each targeting a specific audience : biodiversity, desertification, wetlands, the private sector, and the health sector. Of the 5 synthesis reports, the one dealing with question surrounding business and biodiversity, «Opportunities and Challenges of Business and Industry », is particularly interesting. Of the 16 members of the drafting team, 8 had been directly involved in the IPCC and/or directly in the negotiations of the UNFCCC and of the Kyoto Protocol.

Percy	Steve	US	BP	Kyoto protocol
Ebi	Kristie	US	Exponent Health Group	IPCC
Kumar	Pushpam	India	Institute of Economic Growth	IPCC
Yohe	Gary	US	Wesleyan University	IPCC
Lubchenco	Jane	US	Oregon State University	UNFCCC
Lash	jonathan	US	WRI	UNFCCC
Prickett	Glen	US	CI	COP 15 UNFCCC
Erhmann	john	US	Meridian Institute	UNFCCC (organisation)

Among the 8 individuals, a majority were Americans from diverse organizations : universities, research centers, conservation NGO, think tanks, private sector. The Meridian Institute was one organization specialized in the organization of global events, and the individual had participated in the organization of the UNFCCC. Otherwise, the two co-chairs of the synthesis are from the climate regime complex. The two co-chairs of this synthesis report, were the ex-CEO of BP and Jane Lubchenko. The latter was on the WRI Board and made herself known through her publications on climate change and her appearances in the United States Congress. She is known to promote the links between science and business to develop a green economy.

The team drafting the synthesis titled « Opportunities and Challenges of Business and Industry », has significantly more individuals involved in both the climate regime complex and the biodiversity regime complex than the other synthesis teams.

To better understand this phenomenon, it is necessary to look back at the international negotiations on climate change during the 1990s. During this period, a business NGO coalition emerges that promotes the emblematic market-based mechanism, emissions-trading (OECD, 1997, 2003, 2007; Pirard, 2012). Meckling uses the advocacy coalition approach to describe business involvement in climate issues in the 1990s (Meckling, 2011). The author shows how, prior to 1990, the dividing line between the coalitions had been between "anti-regulation coalitions" and "coalitions in favor of command and control type measures" (ibid, p43). Meckling shows how a third coalition appeared at the beginning of the 1990s, the "pro-trading coalition" in favor of carbon trading. This last coalition included NGOs and business, and was a more powerful lobby group in the Kyoto climate negotiations than in the EU. The members of the coalition gradually relied on scientific experts and on allies from national administrations (US) and supranational administrations (EU) to develop a market-based regulation of greenhouse gas mitigations. This coalition was based on a shared preference for a type of market-based GHG governance as the lesser evil compared to a regulatory approach, and on a will to develop carbon market instruments, such as greenhouse gas emission quotas, by influencing decision-makers. The leaders of this coalition included BP and DuPont. Some authors of the drafting team for the synthesis "Opportunities and Challenges of Business and Industry" came from the GHG pro-trading coalition, notably the former CEO of BP Americas. In our interview with him, he stated, "When I was with BP we were, you may recall, or maybe you don't recall, we were very active on the issue of climate change. And we were instrumental at developing internal trading regimes to help us reduce our own emissions. I got involved with MBI approaches to solving environmental problems back in the 90s with BP" [8]. Meckling shows that although business could not prevent the control of emissions, it could influence the type of regulation, in favor of market-based regulation. Business therefore had a considerable influence over the style of regulation, and recruitment of the members of this coalition to the MA was bound to facilitate the transfer of public policy solutions from the climate regime to the biodiversity regime.

Market based instruments (MBIs) were adopted in the framework of the negotiations on the Kyoto Protocol, and the MA represents an essential stage in the legitimization of the economic value (in terms of legal tender) of biodiversity through the use of the concept of ecosystem service and the use of MBIs in biodiversity. This analysis reinforces the idea that actors, by virtue of their position at the interface between two regime complexes, are able to contribute to the circulation of standards and ideas for the development of public policy.

Conclusion

[8] Interview with the former CEO of BP Americas, April 2011.

This study sought to know if the climate regime complex, by virtue of its anteriority and through the strong recognition of the role of the IPCC, plays a notable role in inspiring the diverse modalities of the biodiversity regime complex. The research seems to confirm the hypothesis that certain organizations and certain individuals play a predominant role in conveying the ideas and models of the climate regime complex towards the biodiversity regime complex. This circulation occurs primarily by the transfer of organizational models and collective work methods for the function of science-policy interfaces like the IPCC and now, the IPBES. The logistics of learning dictate that individuals, having acquired particular knowledge or skill in these processes, are the principal candidates for participating and managing similar processes.

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